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Premature Mortality Due to Congenital Anomalies — United States

In 1986, as in previous years (*1,2*), congenital anomalies (CAs) were the fifth leading cause of years of potential life lost before age 65 (YPLL). They accounted for 651,523 or approximately 5.4% of all YPLL (*3*).

An examination of detailed mortality data for 1985 from the National Center for Health Statistics indicated that agenesis, hypoplasia, and dysplasia of the lung (ICD-9 code 748.5) were the leading causes of YPLL, accounting for 9.1% of CA-attributable YPLL (Table 1). Six types of CAs of the cardiovascular system were among the 15 leading causes of premature mortality attributed to CAs; hypoplastic left heart syndrome was the third leading cause (Table 1). Three chromosomal defects—

TABLE 1. Years of potential life lost before age 65 due to congenital anomalies, by type of defect and race — United States, 1985

Cause of mortality (ICD-9)	White		Other		Total	
	No.	(%)	No.	(%)	No.	(%)
Agenesis, hypoplasia and dysplasia of lung (748.5)	48,765	(8.9)	12,903	(9.8)	61,667	(9.1)
Anencephalus (740.0–740.2)	39,008	(7.2)	5,733	(4.3)	44,741	(6.6)
Hypoplastic left heart syndrome (746.7)	35,505	(6.5)	7,725	(5.8)	43,230	(6.4)
Edwards's syndrome (Trisomy 18) (758.2)	23,054	(4.2)	5,661	(4.3)	28,715	(4.2)
Anomalies of diaphragm (756.6)	23,545	(4.3)	3,831	(2.9)	27,376	(4.0)
Renal agenesis and dysgenesis (753.0)	22,695	(4.2)	4,421	(3.3)	27,116	(4.0)
Ventricular septal defect (745.3, 745.4, 745.7)	14,903	(2.7)	4,098	(3.1)	19,001	(2.8)
Congenital hydrocephalus (742.3)	13,369	(2.5)	4,753	(3.6)	18,122	(2.7)
Patau's syndrome (Trisomy 13) (758.1)	13,014	(2.4)	3,138	(2.4)	16,152	(2.4)
Transposition of great vessels (745.1)	12,003	(2.2)	1,442	(1.1)	13,444	(2.0)
Tetralogy of Fallot (745.2)	10,386	(1.9)	2,519	(1.9)	12,905	(1.9)
Down's syndrome (758.0)	8,442	(1.6)	1,772	(1.3)	10,214	(1.5)
Endocardial cushion defects (745.6)	7,808	(1.4)	2,246	(1.7)	10,053	(1.5)
Spina bifida (741.0–741.9)	8,730	(1.6)	1,294	(1.0)	10,024	(1.5)
Common truncus (745.0)	6,364	(1.2)	1,067	(0.8)	7,430	(1.1)
Other anomalies	258,200	(47.3)	69,664	(52.7)	327,868	(48.4)
Total anomalies	**545,791**	**(100.0)**	**132,267**	**(100.0)**	**678,058**	**(100.0)**

Congenital Anomalies — Continued

trisomies of chromosomes 13 and 18 and Down syndrome—were also among the leading 15 causes of CA-attributable YPLL. The two major neural tube defects, anencephalus and spina bifida, were the second and 14th leading causes, respectively, together accounting for 8.1% of YPLL attributed to CAs.

The proportional distribution of CA-attributable YPLL varied by race (Table 1). For example, anencephalus and spina bifida accounted for a higher percentage of YPLL for whites, while congenital hydrocephalus accounted for a larger proportion of YPLL for other races.

Reported by: Birth Defects and Genetic Diseases Br, Div of Birth Defects and Developmental Disabilities, Center for Environmental Health and Injury Control, CDC.

Editorial Note: As infant mortality due to other causes has been reduced, CAs have become the leading cause of infant mortality (*4*) and are the fifth leading cause of YPLL.

Variation in the proportional distribution of CA-attributable YPLL by race is due to several factors, including variations in the incidence of birth defects. For example, neural tube defects occur more frequently among whites than among other races. In addition, some of the variation for other anomalies may result from differences in access to medical care and in the likelihood of medical intervention to correct malformations, which in turn affects survival rates.

YPLL estimates may understate the public health impact of CAs for at least two reasons. First, because anomalies in infants who die shortly after birth may not be diagnosed, these infant deaths may not be attributed to CAs. Second, because YPLL statistics are based only on live births, the impact of CAs may be underestimated since a substantial number of fetuses with anomalies are stillborn or spontaneously aborted. In addition, because prenatal diagnosis of neural tube and chromosomal defects is possible in some instances, pregnancies may be terminated and are not represented in the YPLL statistics.

Improvements in the care of persons with some types of CAs may reduce YPLL in the future. However, because many infants survive with irreparable CAs and live for decades with disabilities, primary prevention of CAs is the ultimate goal. Primary prevention will require further understanding of the causes of CAs.

References

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2. CDC. Premature mortality due to congenital anomalies—United States, 1984. MMWR 1987;36:370.
3. CDC. Table V. Estimated years of potential life lost (YPLL) before age 65 and cause-specific mortality, by cause of death—United States, 1986. MMWR 1988;37:45.
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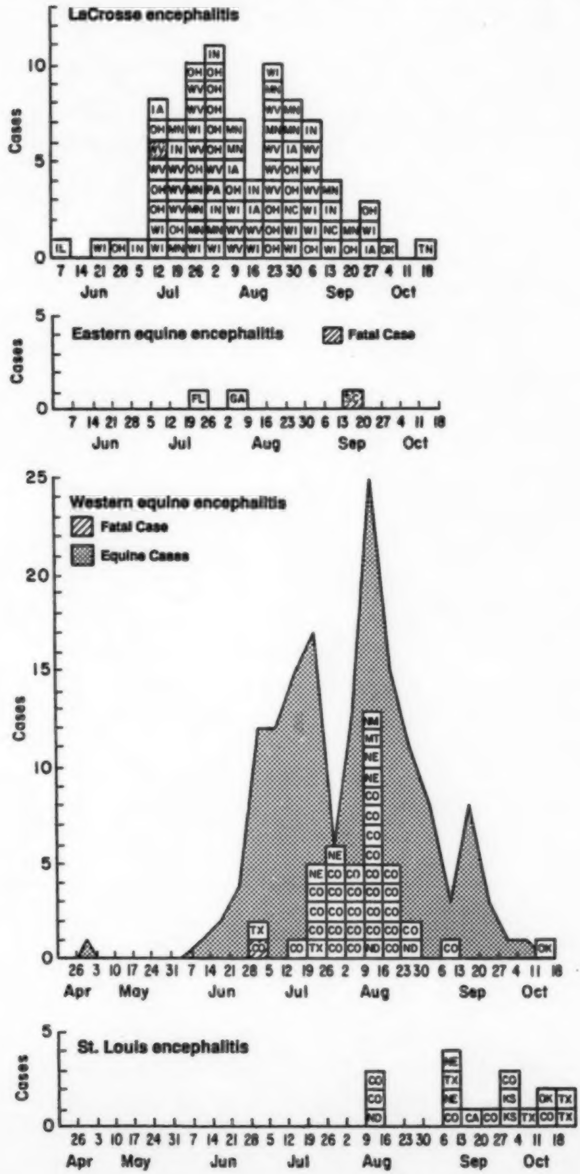
Current Trends

Arboviral Infections of the Central Nervous System — United States, 1987

In 1987, 148 U.S. cases of arboviral encephalitis were reported to CDC (Figure 1). Outbreaks of western equine encephalitis (WEE) and St. Louis encephalitis (SLE) in the Great Plains and Mountain states resulted in 41 WEE cases (one fatal) and 17 SLE cases (*1*) (Figures 1 and 2). The WEE outbreak led to an epizootic among horses in the same region, producing 173 equine cases. LaCrosse virus, the principal cause of

Arboviral Infections – Continued

FIGURE 1. Arboviral infections of the central nervous system – United States, 1987



Arboviral Infections — Continued

endemic arboviral central nervous system (CNS) infections in the United States, was the etiologic agent in 87 cases (one fatal) reported in 1987. Three sporadic cases of eastern equine encephalitis (EEE) were reported from recognized endemic foci on the Atlantic Coast.

Western equine encephalitis. The WEE outbreak was first recognized in southern Texas with reports of equine cases in April and June (Figure 1). By June, the epizootic had spread through the panhandle of Texas, Oklahoma, New Mexico, and southern Colorado, and by July, equine cases had been reported from as far north as North Dakota (*1*). From August through October, equine cases were recognized in the northwest and in the eastern plains. Equine cases were reported from 120 counties nationwide (Figure 2).

The epidemic began in early July. Initially, cases were reported from southern Colorado but eventually were recognized in seven western states. Active hospital-based surveillance in Colorado identified cases in 10 counties, for an estimated incidence of 1.63/100,000 in the counties reporting cases and 1.03/100,000 statewide.

(Continued on page 513)

TABLE I. Summary — cases of specified notifiable diseases, United States

Disease	33rd Week Ending			Cumulative, 33rd Week Ending		
	Aug. 20, 1988	Aug. 22, 1987	Median 1983-1987	Aug. 20, 1988	Aug. 22, 1987	Median 1983-1987
Acquired Immunodeficiency Syndrome (AIDS)	498	U *	126	19,815	12,129	4,808
Aseptic meningitis	196	705	457	3,130	5,824	4,821
Encephalitis: Primary (arthropod-borne & unspec)	23	58	39	464	706	657
Post-infectious	4	2	1	81	77	77
Gonorrhea: Civilian	12,791	15,472	18,387	428,139	494,969	550,667
Military	215	284	423	7,765	10,640	13,296
Hepatitis: Type A	465	595	416	15,281	15,690	13,645
Type B	576	573	497	14,054	16,360	15,957
Non A, Non B	46	59	71	1,623	2,007	2,312
Unspecified	58	87	107	1,345	1,985	3,075
Legionellosis	29	21	13	566	592	451
Leprosy	5	4	6	108	123	161
Malaria	19	23	23	513	537	576
Measles: Total[†]	48	58	58	2,088	3,207	2,300
Indigenous	46	48	48	1,874	2,825	1,947
Imported	2	10	3	214	382	258
Meningococcal infections	35	36	28	2,004	2,017	1,931
Mumps	29	57	34	3,315	10,044	2,360
Pertussis	55	92	85	1,451	1,367	1,403
Rubella (German measles)	2	2	8	143	275	482
Syphilis (Primary & Secondary): Civilian	698	758	594	24,071	22,031	17,526
Military	3	13	4	110	120	120
Toxic Shock syndrome	8	8	7	206	204	252
Tuberculosis	373	484	480	12,771	13,283	13,299
Tularemia	9	6	6	124	128	128
Typhoid Fever	3	7	8	208	191	209
Typhus fever, tick-borne (RMSF)	19	36	36	412	425	469
Rabies, animal	74	77	128	2,675	3,105	3,356

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1988		Cum. 1988
Anthrax	-	Leptospirosis	19
Botulism: Foodborne	15	Plague	6
Infant	22	Poliomyelitis, Paralytic	-
Other	3	Psittacosis	52
Brucellosis (Tex. 1)	39	Rabies, human	-
Cholera	-	Tetanus (Ohio 1)	30
Congenital rubella syndrome	3	Trichinosis	36
Congenital syphilis, ages < 1 year	171		
Diphtheria	-		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Two of the 48 reported cases for this week was imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending August 20, 1988 and August 22, 1987 (33rd Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	19,815	3,130	464	81	428,139	494,969	15,281	14,054	1,623	1,345	566	108
NEW ENGLAND	860	173	17	3	13,217	15,082	564	789	94	69	26	14
Maine	24	10	1	-	248	430	16	36	3	1	5	-
N.H.	19	20	1	2	164	259	37	53	7	4	3	-
Vt.	9	11	5	-	87	128	9	22	5	2	1	-
Mass.	463	72	7	1	4,576	5,573	270	486	63	49	14	13
R.I.	56	39	-	-	1,151	1,300	63	63	9	-	3	1
Conn.	289	21	3	-	6,991	7,392	169	129	7	13	-	-
MID. ATLANTIC	6,670	276	38	4	64,236	80,677	959	1,847	101	155	136	8
Upstate N.Y.	862	165	26	1	9,265	10,950	490	487	44	15	63	-
N.Y. City	3,642	64	7	3	26,303	42,079	203	841	10	112	24	7
N.J.	1,636	47	5	-	9,562	10,441	156	396	36	26	20	1
Pa.	530	-	-	-	19,106	17,207	110	123	11	2	29	-
E.N. CENTRAL	1,453	431	116	11	69,792	72,903	1,002	1,489	143	77	113	1
Ohio	305	149	30	3	15,761	16,046	223	354	24	12	48	-
Ind.	80	45	14	-	5,436	5,826	97	212	13	20	8	-
Ill.	691	65	30	8	20,661	22,334	287	294	51	19	-	-
Mich.	299	148	31	-	22,796	22,103	241	455	35	23	44	-
Wis.	78	24	11	-	5,138	6,594	154	174	20	3	13	1
W.N. CENTRAL	452	142	31	7	17,725	20,091	870	675	72	23	56	1
Minn.	88	25	6	3	2,401	3,078	71	90	15	3	2	-
Iowa	28	19	8	-	1,336	1,925	35	65	11	1	14	-
Mo.	236	53	1	-	10,103	10,685	503	395	32	12	13	-
N. Dak.	4	-	4	-	97	189	4	6	2	4	1	-
S. Dak.	5	13	1	1	344	369	6	3	2	-	14	-
Nebr.	25	5	5	2	1,005	1,236	42	35	1	-	5	-
Kans.	66	27	6	1	2,439	2,609	209	81	9	3	7	1
S. ATLANTIC	3,407	707	67	27	124,286	128,972	1,393	3,045	244	192	90	1
Del.	42	14	2	-	1,837	2,089	24	85	6	2	8	-
Md.	358	79	5	3	12,568	14,628	182	438	23	13	15	1
D.C.	327	13	1	1	8,649	8,514	12	30	3	1	1	-
Va.	225	73	23	3	8,600	9,308	269	207	54	121	6	-
W. Va.	10	16	11	-	884	963	10	42	2	3	-	-
N.C.	195	89	16	-	19,695	18,942	217	533	59	-	26	-
S.C.	116	11	-	1	9,264	10,634	31	340	8	5	15	-
Ga.	474	84	1	-	23,490	22,729	281	431	10	4	13	-
Fla.	1,660	328	8	19	39,298	41,165	357	939	79	43	15	-
E.S. CENTRAL	503	218	38	6	33,928	37,316	463	835	119	7	24	1
Ky.	60	60	10	1	3,344	3,752	355	142	41	2	9	-
Tenn.	235	21	11	-	11,440	13,069	62	433	30	-	7	-
Ala.	124	112	17	2	10,618	11,972	30	208	40	5	5	1
Miss.	84	25	-	3	8,526	8,523	16	52	8	-	3	-
W.S. CENTRAL	1,612	401	50	3	47,848	56,412	1,768	1,167	129	342	15	19
Ark.	56	6	2	-	4,606	6,463	198	64	1	10	3	-
La.	207	60	13	1	9,307	9,995	87	217	17	11	5	1
Okla.	99	35	4	-	4,393	6,167	338	119	31	21	7	-
Tex.	1,250	300	31	2	29,542	33,787	1,145	767	80	300	-	18
MOUNTAIN	590	119	22	2	9,405	13,113	2,111	1,086	172	111	30	1
Mont.	10	2	-	-	302	363	25	34	9	3	1	-
Idaho	7	1	-	-	240	464	107	80	5	3	-	-
Wyo.	3	2	-	-	135	291	4	10	3	-	2	-
Colo.	230	46	3	-	2,181	2,900	146	141	47	55	8	1
N. Mex.	30	8	2	-	883	1,409	389	159	13	1	1	-
Ariz.	109	34	8	1	3,289	4,482	1,067	418	52	31	12	-
Utah	46	17	4	1	372	402	226	91	29	14	3	-
Nev.	95	9	5	-	2,003	2,802	147	153	14	4	3	-
PACIFIC	4,268	663	85	18	47,702	70,403	6,151	3,121	549	369	67	62
Wash.	248	-	6	4	4,257	5,381	1,368	514	128	40	14	4
Oreg.	135	-	-	-	2,042	2,636	904	383	52	17	-	1
Calif.	3,801	586	76	14	40,319	60,766	3,583	2,151	360	302	50	49
Alaska	15	13	2	-	675	1,067	279	39	5	5	-	1
Hawaii	69	64	1	-	409	553	7	34	4	5	3	7
Guam	1	-	-	-	87	144	9	9	-	2	1	4
P.R.	769	32	2	1	880	1,372	30	166	27	31	-	3
V.I.	32	-	-	-	265	167	1	5	2	-	-	-
Amer. Samoa	-	-	-	-	59	56	-	2	-	5	-	2
C.N.M.I.	-	-	-	-	34	-	1	2	-	4	-	1

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 20 , 1988 and August 22, 1987 (33rd Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	1988	Cum. 1988	Cum. 1987
UNITED STATES	513	46	1,874	2	214	3,207	2,004	29	3,315	55	1,451	1,367	2	143	275
NEW ENGLAND	40	-	80	-	50	252	177	-	104	3	113	61	-	5	1
Maine	2	-	7	-	-	3	7	-	-	-	11	8	-	-	1
N.H.	1	-	66	-	44	152	20	-	95	-	33	13	-	3	-
Vt.	2	-	-	-	-	26	13	-	2	-	3	4	-	-	-
Mass.	21	-	1	-	2	48	82	-	7	1	46	23	-	1	-
R.I.	5	-	-	-	-	2	21	-	-	-	6	1	-	1	-
Conn.	9	-	6	-	4	21	34	-	-	2	14	12	-	-	-
MID. ATLANTIC	69	3	766	-	42	558	190	5	274	3	84	152	-	12	11
Upstate N.Y.	23	-	16	-	16	39	93	2	75	1	46	107	-	2	9
N.Y. City	35	-	40	-	2	446	51	-	92	-	2	-	-	7	1
N.J.	5	-	192	-	11	35	45	-	31	-	4	8	-	1	1
Pa.	6	3	518	-	13	38	1	3	76	2	32	37	-	2	-
E.N. CENTRAL	32	-	132	-	46	296	277	11	679	4	153	188	-	23	34
Ohio	7	-	2	-	22	5	95	-	97	-	25	51	-	-	-
Ind.	2	-	57	-	-	-	22	1	67	1	60	13	-	-	-
Ill.	1	-	55	-	15	125	62	9	253	3	23	14	-	19	24
Mich.	19	-	18	-	5	29	61	1	174	-	25	39	-	4	9
Wis.	3	-	-	-	4	137	37	-	88	-	20	71	-	-	1
W.N. CENTRAL	13	-	11	-	1	230	76	-	117	1	85	88	-	-	1
Minn.	5	-	10	-	1	38	16	-	-	-	37	11	-	-	-
Iowa	1	-	-	-	-	-	-	-	31	-	19	30	-	-	1
Mo.	3	-	1	-	-	189	28	-	30	-	11	24	-	-	-
N. Dak.	-	-	-	-	-	1	-	-	-	-	7	7	-	-	-
S. Dak.	-	-	-	-	-	-	3	-	1	-	5	3	-	-	-
Nebr.	1	-	-	-	-	-	10	-	11	-	-	1	-	-	-
Kans.	3	-	-	-	-	1	19	-	44	1	8	12	-	-	-
S. ATLANTIC	72	5	280	1	14	120	360	5	539	4	158	222	-	16	13
Del.	-	-	-	-	-	32	2	-	-	-	5	5	-	-	2
Md.	9	1	11	-	3	5	38	-	95	-	26	8	-	1	2
D.C.	11	-	-	-	-	1	7	4	204	-	-	-	-	-	-
Va.	10	-	141	-	2	1	39	-	142	-	27	44	-	11	1
W. Va.	-	-	6	-	-	-	6	1	9	-	8	33	-	-	-
N.C.	11	-	-	1†	2	5	59	-	38	-	40	90	-	-	1
S.C.	8	-	-	-	-	2	33	-	4	-	1	-	-	-	-
Ga.	4	-	-	-	-	1	51	-	25	4	25	23	-	1	1
Fla.	19	4	122	-	7	82	115	-	22	-	28	19	-	3	6
E.S. CENTRAL	8	-	52	-	-	5	188	-	383	2	39	27	-	-	3
Ky.	-	-	35	-	-	-	39	-	174	-	6	1	-	-	2
Tenn.	-	-	-	-	-	-	112	-	195	-	16	8	-	-	1
Ala.	5	-	1	-	-	3	26	-	11	2	16	13	-	-	-
Miss.	3	-	16	-	-	2	11	N	N	-	1	5	-	-	-
W.S. CENTRAL	51	-	11	-	3	407	132	2	645	12	90	123	-	7	10
Ark.	1	-	-	-	1	-	17	-	82	-	9	10	-	3	2
La.	9	-	-	-	-	-	37	2	248	1	15	29	-	-	-
Okla.	8	-	8	-	-	3	14	-	173	11	39	84	-	1	5
Tex.	33	-	3	-	2	404	64	-	142	-	27	-	-	3	3
MOUNTAIN	24	1	117	1	21	401	58	-	150	2	430	127	1	6	24
Mont.	4	1	5	1†	19	128	2	-	2	-	1	6	-	-	8
Idaho	-	-	-	-	1	-	7	-	2	1	260	40	-	-	1
Wyo.	-	-	-	-	-	2	-	-	2	-	1	5	-	-	1
Colo.	9	-	112	-	1	9	14	-	28	-	14	43	1	2	-
N. Mex.	1	-	-	-	-	317	10	N	N	1	20	8	-	-	-
Ariz.	6	-	-	-	-	31	15	-	102	-	113	23	-	-	4
Utah	3	-	-	-	-	1	9	-	3	-	20	2	-	3	10
Nev.	1	-	-	-	-	3	1	-	11	-	1	-	-	1	-
PACIFIC	204	37	425	-	37	839	556	6	424	24	299	379	1	74	178
Wash.	12	-	2	-	-	41	48	-	40	8	64	63	-	-	1
Oreg.	11	-	3	-	-	74	30	N	N	4	20	53	-	-	2
Calif.	170	37	417	-	29	720	457	5	363	12	164	135	1	54	112
Alaska	2	-	-	-	-	-	6	1	9	-	6	6	-	-	2
Hawaii	9	-	3	-	8	4	15	-	11	-	45	122	-	20	61
Guam	-	-	-	-	1	2	-	-	2	-	-	-	-	1	1
P.R.	1	-	191	-	-	720	8	-	7	-	12	15	1	2	2
V.I.	-	-	-	-	-	-	-	-	28	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-
C.N.M.I.	1	-	-	-	-	-	1	-	2	-	-	-	-	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International ‡Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 20, 1988 and August 22, 1987 (33rd Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	24,071	22,031	206	12,771	13,283	124	208	412	2,675
NEW ENGLAND	689	366	17	327	414	2	16	8	11
Maine	9	1	4	18	18	-	-	-	1
N.H.	6	3	3	7	12	-	-	-	3
Vt.	3	1	2	2	9	-	1	-	-
Mass.	268	174	8	184	232	1	10	4	-
R.I.	22	8	-	30	35	-	-	2	-
Conn.	381	179	-	86	108	1	5	2	7
MID. ATLANTIC	4,855	4,171	30	2,296	2,257	-	39	16	332
Upstate N.Y.	335	148	15	342	332	-	5	8	17
N.Y. City	3,096	3,027	5	1,132	1,079	-	23	6	-
N.J.	579	438	3	415	408	-	11	-	9
Pa.	845	558	7	407	438	-	-	2	306
E.N. CENTRAL	700	576	32	1,428	1,513	1	24	32	93
Ohio	65	69	22	208	289	-	6	27	3
Ind.	36	42	-	146	144	-	2	-	17
Ill.	341	311	1	599	665	-	11	2	16
Mich.	238	109	9	346	349	1	4	2	28
Wis.	20	45	-	69	66	-	1	1	28
W.N. CENTRAL	146	106	24	339	400	61	4	64	331
Minn.	15	13	5	57	81	3	2	2	103
Iowa	16	19	5	32	27	-	-	-	13
Mo.	87	55	7	172	220	36	2	39	15
N. Dak.	1	-	2	5	6	1	-	-	68
S. Dak.	-	8	1	24	21	15	-	7	95
Nebr.	21	7	2	9	16	2	-	1	10
Kans.	6	4	2	40	29	4	-	15	27
S. ATLANTIC	8,911	7,460	16	2,013	2,065	4	24	131	881
Del.	73	48	1	22	30	1	-	1	37
Md.	483	381	3	271	255	-	1	20	215
D.C.	429	220	-	125	92	-	1	-	5
Va.	262	188	-	254	284	2	9	12	239
W. Va.	7	6	-	51	72	-	-	2	57
N.C.	508	405	7	273	314	-	1	67	5
S.C.	439	492	2	310	289	-	-	14	61
Ga.	1,482	1,042	-	467	482	1	2	10	174
Fla.	5,228	4,678	3	1,040	1,047	-	10	5	78
E.S. CENTRAL	1,223	1,195	17	1,081	1,141	7	3	52	193
Ky.	41	12	7	254	275	4	1	15	75
Tenn.	520	479	7	309	334	2	-	26	55
Ala.	370	312	3	339	344	-	1	7	61
Miss.	292	392	-	179	188	1	1	4	2
W.S. CENTRAL	2,712	2,686	19	1,622	1,559	35	7	97	360
Ark.	147	176	1	178	184	21	-	15	60
La.	514	470	-	190	180	-	3	1	3
Okla.	98	92	6	155	149	12	-	71	24
Tex.	1,953	1,948	12	1,099	1,046	2	4	10	273
MOUNTAIN	457	443	23	322	393	10	7	10	230
Mont.	3	8	-	12	9	-	1	6	146
Idaho	2	5	3	11	25	-	-	1	5
Wyo.	1	1	-	2	2	2	-	3	28
Colo.	76	75	3	33	105	5	3	-	13
N. Mex.	35	35	-	65	64	2	1	-	7
Ariz.	108	220	8	149	153	-	2	-	27
Utah	11	18	9	18	18	1	-	-	4
Nev.	221	81	-	32	19	-	-		-
PACIFIC	4,378	5,028	28	2,543	2,741	4	84	2	244
Wash.	116	87	3	129	167	-	5	-	-
Oreg.	187	187	1	94	64	-	6	1	-
Calif.	4,044	4,742	24	2,194	2,353	2	70	1	236
Alaska	9	3	-	27	32	2	-	-	8
Hawaii	22	9	-	99	125	-	3	-	-
Guam	3	2	-	14	25	-	-	-	-
P.R.	385	611	-	138	195	-	4	-	44
V.I.	1	4	-	4	2	-	-	-	-
Amer. Samoa	-	-	-	3	3	-	1	-	-
C.N.M.I.	1	-	-	17	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending August 20, 1988 (33rd Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	>65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	644	450	107	49	21	17	43
Boston, Mass.	185	107	42	16	10	10	13
Bridgeport, Conn.	38	31	6	1	-	-	4
Cambridge, Mass.	32	26	4	2	-	-	4
Fall River, Mass.	28	21	7	-	-	-	1
Hartford, Conn.	47	33	5	4	3	2	1
Lowell, Mass.	21	18	3	-	-	-	2
Lynn, Mass.	17	14	1	2	-	-	-
New Bedford, Mass.	21	18	3	-	-	-	1
New Haven, Conn.	49	31	8	8	2	-	2
Providence, R.I.	52	41	5	4	2	-	2
Somerville, Mass.	9	8	1	-	-	-	2
Springfield, Mass.	33	22	4	4	1	2	4
Waterbury, Conn.	45	32	6	4	3	-	3
Worcester, Mass.	67	48	12	4	-	3	4
MID. ATLANTIC	2,954	1,831	591	336	66	128	156
Albany, N.Y.	43	31	8	2	1	1	1
Allentown, Pa.	22	17	5	-	-	-	1
Buffalo, N.Y.	142	99	28	10	1	3	15
Camden, N.J.	36	15	12	7	-	2	1
Elizabeth, N.J.	31	18	6	6	-	1	2
Erie, Pa.†	43	26	13	4	-	-	-
Jersey City, N.J.	79	57	8	10	1	3	2
N.Y. City, N.Y.	1,558	959	315	219	40	25	62
Newark, N.J.	80	37	16	21	1	5	5
Paterson, N.J.	43	31	8	3	1	-	4
Philadelphia, Pa.	403	196	90	22	16	78	24
Pittsburgh, Pa.†	80	44	22	10	-	4	2
Reading, Pa.	29	20	8	1	-	-	1
Rochester, N.Y.	131	105	20	4	1	1	20
Schenectady, N.Y.	24	18	4	1	-	1	3
Scranton, Pa.†	29	23	4	2	-	-	1
Syracuse, N.Y.	95	65	14	8	4	4	8
Trenton, N.J.	37	25	8	4	-	-	1
Utica, N.Y.	21	19	1	1	-	-	3
Yonkers, N.Y.	28	26	1	1	-	-	-
E.N. CENTRAL	2,508	1,602	549	197	85	75	96
Akron, Ohio	62	39	15	5	1	2	1
Canton, Ohio	36	24	10	1	-	1	5
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	274	179	62	18	6	9	24
Cleveland, Ohio	147	83	39	12	6	7	1
Columbus, Ohio	120	63	30	12	11	4	2
Dayton, Ohio	102	69	25	6	1	1	5
Detroit, Mich.	303	172	68	43	11	9	2
Evansville, Ind.	46	32	12	2	-	-	3
Fort Wayne, Ind.	62	40	15	3	3	1	-
Gary, Ind.	22	8	7	3	3	1	1
Grand Rapids, Mich.	45	34	3	6	1	1	-
Indianapolis, Ind.	193	122	40	18	8	5	2
Madison, Wis.	42	30	5	2	3	2	4
Milwaukee, Wis.	155	112	28	6	5	4	9
Peoria, Ill.	36	22	12	1	1	-	3
Rockford, Ill.	44	29	9	2	2	2	3
South Bend, Ind.	49	33	11	3	1	1	2
Toledo, Ohio	149	106	26	6	8	3	13
Youngstown, Ohio	57	43	7	3	4	-	-
W.N. CENTRAL	684	465	147	25	24	23	32
Des Moines, Iowa	85	55	19	2	2	7	3
Duluth, Minn.	28	23	3	1	-	1	3
Kansas City, Kans.	38	18	11	5	2	2	1
Kansas City, Mo.	107	81	18	1	4	3	11
Lincoln, Nebr.	29	23	5	-	-	1	4
Minneapolis, Minn.	71	49	10	4	4	4	-
Omaha, Nebr.	76	49	16	4	4	3	5
St. Louis, Mo.	126	72	43	5	6	-	2
St. Paul, Minn.	53	41	8	2	1	1	-
Wichita, Kans.§	71	54	14	1	1	1	3
S. ATLANTIC	1,212	705	281	150	39	37	44
Atlanta, Ga.	145	81	40	18	4	2	4
Baltimore, Md.	170	104	43	17	2	4	8
Charlotte, N.C.	72	35	22	10	2	3	3
Jacksonville, Fla.	107	65	25	8	6	3	4
Miami, Fla.	134	74	26	24	7	3	-
Norfolk, Va.	47	24	10	5	4	4	1
Richmond, Va.	102	66	18	13	2	3	9
Savannah, Ga.	61	39	11	7	1	3	3
St. Petersburg, Fla.	81	60	13	4	2	2	2
Tampa, Fla.	73	40	22	6	3	2	5
Washington, D.C.	200	103	45	38	6	8	2
Wilmington, Del.	20	14	6	-	-	-	3
E.S. CENTRAL	762	460	186	66	24	26	36
Birmingham, Ala.	128	72	29	8	8	11	1
Chattanooga, Tenn.	43	22	13	5	3	-	1
Knoxville, Tenn.	77	49	21	6	1	-	5
Louisville, Ky.	130	86	24	12	-	8	7
Memphis, Tenn.	188	108	53	14	8	5	11
Mobile, Ala.	93	57	21	11	3	1	4
Montgomery, Ala.	16	11	5	-	-	-	2
Nashville, Tenn.	87	55	20	10	1	1	5
W.S. CENTRAL	1,659	986	352	196	80	35	58
Austin, Tex.	55	42	6	6	1	-	4
Baton Rouge, La.	42	22	15	2	2	1	2
Corpus Christi, Tex.§	53	39	11	2	1	-	1
Dallas, Tex.	177	67	34	45	27	4	6
El Paso, Tex.	61	40	12	6	2	1	-
Fort Worth, Tex	72	50	11	8	3	-	5
Houston, Tex.§	727	426	169	90	25	17	19
Little Rock, Ark.	87	50	18	10	6	3	5
New Orleans, La.	115	66	27	13	4	5	-
San Antonio, Tex.	148	101	26	9	8	4	10
Shreveport, La.	48	34	11	3	-	-	3
Tulsa, Okla.	74	59	12	2	1	-	3
MOUNTAIN	650	398	135	67	27	23	35
Albuquerque, N. Mex.	85	52	15	7	9	2	3
Colo. Springs, Colo.	43	25	6	9	1	2	5
Denver, Colo.	102	64	23	14	1	-	4
Las Vegas, Nev.	107	64	30	8	3	2	7
Ogden, Utah	34	24	4	3	1	2	5
Phoenix, Ariz.	126	63	38	14	6	5	3
Pueblo, Colo.	18	14	2	2	-	-	-
Salt Lake City, Utah	39	24	6	3	2	4	1
Tucson, Ariz.	96	68	11	7	4	6	7
PACIFIC	1,805	1,173	331	172	71	48	105
Berkeley, Calif.	16	14	1	1	-	-	1
Fresno, Calif.	74	49	14	4	5	2	16
Glendale, Calif.	26	19	7	-	-	-	2
Honolulu, Hawaii	45	32	5	4	3	1	4
Long Beach, Calif.	83	59	15	5	1	3	10
Los Angeles Calif.	503	319	93	56	16	10	25
Oakland, Calif.	65	37	13	3	6	6	2
Pasadena, Calif.	23	14	3	2	-	4	-
Portland, Oreg.	137	93	24	8	10	2	5
Sacramento, Calif.	160	103	33	16	5	3	13
San Diego, Calif.	110	66	22	13	6	3	6
San Francisco, Calif.	161	92	37	23	2	6	5
San Jose, Calif.	164	113	31	16	4	-	9
Seattle, Wash.	138	91	21	14	9	3	2
Spokane, Wash.	59	40	8	7	1	3	2
Tacoma, Wash.	41	32	4	-	3	2	3
TOTAL	12,878††	8,080	2,679	1,258	437	412	605

*Mortality data in this table are voluntarily reported from 121 cities in the United states, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available. Figures are estimates based on average of past available 4 weeks.

Arboviral Infections – Continued

The incidence in North Dakota, which identified two cases through passive surveillance, was 0.31/100,000.

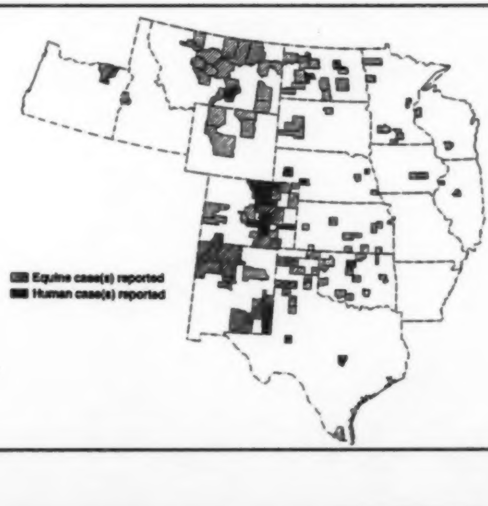
More than twice as many cases occurred in males (28) as in females (13); one elderly man died. The age- and sex-specific rates in the 10 Colorado counties reporting cases were higher in males in every age group (Figure 3). Risk increased with age for both women and men; however, male infants were also at increased risk.

St. Louis encephalitis. Except for one case reported from California, SLE cases in 1987 occurred in association with the WEE outbreak, although they occurred later in the season. The median date of onset of the SLE cases (September 25) was 6 weeks later than that of WEE cases (August 11). Twelve of the 17 SLE cases were in males.

LaCrosse encephalitis. Cases were reported chiefly from the upper midwest from states where the disease is endemic (Figure 1). In West Virginia, one fatal case and four other cases reported by one Charleston hospital in July prompted an epidemiologic investigation (*2*). Active surveillance of children hospitalized with CNS infection in a five-county area of southern West Virginia identified 19 laboratory-confirmed cases, for an estimated incidence of 20.4/100,000 children<15 years old. A case-control study to examine potential environmental and behavioral risk factors showed that more discarded tires containing water were on the premises of patients than on those of matched controls. Other peridomestic artificial containers or natural sites (treeholes) that could support breeding of *Aedes triseriatus*, the principal vector of LaCrosse virus, were not implicated as risk factors. Neither mosquitoes nor infection rates in vectors at case and control premises were enumerated.

Eastern equine encephalitis. Cases were reported in a 7-year-old boy from South Carolina, a 4-year-old girl from Georgia, and a 79-year-old woman from Florida. The 7-year-old boy died; EEE virus was isolated from his brain, and immunohistochemical techniques were used for the first time to demonstrate the distribution of EEE viral antigen in infected neurons and mononuclear cells (*3*). The latter two patients recovered but had significant neurologic sequelae.

FIGURE 2. Human and equine cases of western equine encephalitis, by county, 1987



Arboviral Infections — Continued

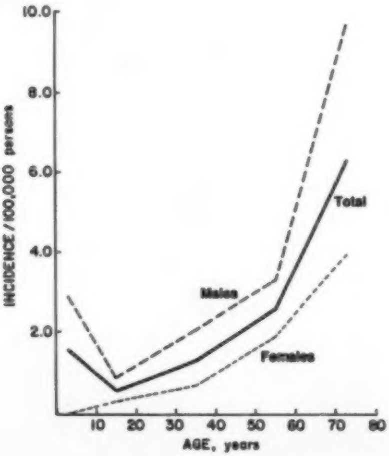
Reported by: RC Baron, MD, Acting State Epidemiologist, West Virginia State Dept of Health. RD Hoffman, MD, State Epidemiologist, Colorado Dept of Health. Various other state and local health departments. JM Powers, MD, Dept of Neuropathology, Columbia Presbyterian Hospital, New York City, New York. L Peterson, DVM, National Veterinary Diagnostic Laboratory, US Dept of Agriculture, Ames, Iowa. Div of Vector-Borne Viral Diseases, Center for Infectious Diseases; Div of Field Svcs, Epidemiology Program Office, CDC.

Editorial Note: In the western United States, WEE virus is maintained perennially in a cycle among birds and *Culex tarsalis*, the principal mosquito vector of WEE (*4*). In most years, transmission from this enzootic cycle leads to a low level of endemic infection in the human population, but periodically, outbreaks of epidemic proportions occur concurrently with even larger numbers of cases in horses. In 1941, in the largest and most extensive WEE outbreak on record, more than 300,000 cases in horses and 3400 in humans were reported from the northern plains states and neighboring Canadian provinces (*5*). In 1975, a WEE outbreak that focused in the Red River Valley of North Dakota and Minnesota resulted in 281 equine and 133 human cases (*6*).

The 1987 WEE outbreak was epidemiologically typical in several respects. Sixty-eight percent of the reported cases were in males; risk of acquiring WEE generally is twofold higher in men than in women, probably because men have a greater level of exposure outdoors to the rural habitat of *Cx. tarsalis*. An increased risk of WEE with advanced age (seen in the age-specific rates in Colorado in 1987) has been observed in most outbreaks. The biological factors associated with increased susceptibility at the extremes of age remain undefined.

Although the apparent northward advance of epizootic WEE activity observed in 1987 has not been reported in previous WEE outbreaks, a similar pattern occurred in the nationwide SLE epidemic in 1975 and in outbreaks of Japanese encephalitis in Japan in 1965 (*7,8*). The progression of virus activity from south to north may have reflected a relative delay in the onset of activities of vectors and intermediate hosts

FIGURE 3. Age- and sex-specific incidence of western equine encephalitis in 10 Colorado counties, 1987



Arboviral Infections — Continued

with increasing latitude. Alternatively, an epidemic virus strain may have been spread by infected vectors that were carried great distances by northward-moving weather fronts (*9*).

In the rural western United States, SLE and WEE viruses are transmitted in the same natural cycle among birds and *Cx. tarsalis*, the principal mosquito vector of both viruses (*4*). A relative delay in the appearance of SLE cases is characteristic of combined WEE-SLE outbreaks. A slower rate of growth of SLE virus in the vector and a dependence of viral multiplication on higher temperatures may contribute to the slight but consistent difference in seasonality (*4*).

The upper midwest has been regarded as the principal endemic focus of LaCrosse encephalitis in the United States (*10*). Population-based epidemiologic studies in Wisconsin and Minnesota in 1978 disclosed an estimated incidence of 31.6/100,000 among children <15 years old (*11*). Although sporadic cases of CNS infection from LaCrosse virus have been recognized previously in southern West Virginia, the area was not regarded as a focus with a high level of transmission. The population-based estimate of incidence in the five-county area near Charleston was similar to that reported from recognized endemic foci in the upper midwest (*11,12*), suggesting that the incidence of LaCrosse virus infection of the CNS may be underestimated in other areas of the eastern United States within the range of *Ae. triseriatus*.

Although discarded tires have been recognized as an important source of *Ae. triseriatus*, the risks associated with various peridomestic natural and artificial containers are unknown (*13*). The results of the West Virginia study suggest that removing discarded tires may be more important as a control measure than removing other kinds of containers or filling treeholes.

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Enterovirus Surveillance — United States, 1988

CDC received reports of 39 nonpolio enterovirus (NPEV) isolates identified in the United States in March through May 1988 from state virology laboratories. Echovirus 9 was isolated most frequently (nine isolates), followed by coxsackievirus B4 (six isolates), coxsackievirus A9 and echovirus 6 (five each), echovirus 11 (three isolates), and coxsackievirus B1 and echovirus 3 (two each).

In 1987, the six most common NPEV isolates were echovirus 6 (169 [16%] of the 1084 isolates), echovirus 18 (144), echovirus 11 (125), coxsackievirus A9 (122), coxsackievirus B2 (83), and echovirus 9 (46). These six NPEV types represented 64% of the total enterovirus isolates reported for 1987.

Reported by: State virology laboratory directors. Respiratory and Enterovirus Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Since 1970, state health department laboratories have submitted reports on enterovirus serotypes to CDC approximately 6–8 weeks after each specimen is submitted for isolation. CDC's NPEV surveillance data show that isolates from March through May predict the types likely to be isolated in July through December, which includes the peak enterovirus season (*1*). Each year (1970–1983), the six most common isolates in March through May accounted for an average of 59% of the isolates in July through December. In 1987, they accounted for 50% of the isolates in July through December.

The reports of early 1988 isolates suggest that echoviruses 3, 6, 9, and 11 and coxsackieviruses A9, B1, and B4 are likely to be common NPEV isolates this year. Each of the most frequent seven isolates reported in March through May this year, and five of the six most frequent isolates reported in 1987, were among the 15 most frequently reported isolates for 1970–1983 (*1*).

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☆U.S. Government Printing Office: 1988-530-111/81522 Region IV